Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims in the application:

1-31 (Cancelled)

32. (Amended) An assembly comprising:
a load member; and
a brushless DC motor, comprising:
a rotor;
a stator housing at least one stator coil; and
a drive circuit comprising:
a rotor position measurement circuit for measuring angular position of the rotor relative to the stator and for determining motor speed:
a commutator circuit for connecting and interrupting current to the stator coil at specified moments of commutation determined from the angular rotor position relative to the stator; and
a commutation shifting apparatus for shifting the specified moments of commutation, the amount of shifting being a predetermined function of motor speed and wherein the commutation shifting apparatus pre-displaces the moments of commutation increasingly toward the rotational position of the rotor after a specified motor speed has been exceeded.

33. (Cancel)

34. (Cancel

35. (Previously presented) The assembly of claim 32, wherein the commutation shifting apparatus shifts the moment for turn-on of a motor current that is allocated to one commutation phase.

36. (Previously presented) The assembly of claim 32, wherein the commutation shifting apparatus shifts the moment for turn-off of a motor current that is allocated to one commutation phase.

37. (Previously presented) The assembly of claim 32, wherein the drive circuit further comprises a microprocessor controller.

38. (Previously presented) The assembly of claim 32, wherein the drive circuit further comprises a speed control circuit.

39. (Previously presented) The assembly of claim 32, wherein the rotor position measuring circuit comprises a circuit for measuring motor speed and wherein the amount of commutation moment shifting by the commutation shifting apparatus is a predetermined function of measured motor speed.

40. (Previously presented) The assembly of claim 39, wherein the commutation shifting apparatus pre-displaces the moments of commutation relative to the rotational position of the rotor, as a function of the estimated motor speed.

41. (Previously presented) The assembly of claim 32, wherein the rotor position measuring circuit comprises a circuit for estimating motor speed and the amount of commutation moment shifting by the commutation shifting apparatus is a predetermined function of estimated motor speed.

42. (Amended) An assembly, comprising:
a load member; and
a brushless DC motor, comprising:
a rotor;
a stator housing at least one stator coil; and
a drive circuit comprising:

a rotor position measuring circuit for measuring angular position of the rotor relative to the stator and for determining motor speed;

a commutator circuit for connecting and interrupting current to the stator coil at specified moments of commutation determined from the angular rotor position relative to the stator; and

a commutation shifting apparatus for shifting the specified moments of commutation, the amount of shifting being a predetermined function of motor speed, wherein the moments of commutation are shifted as a function of the motor speed according to an unsteady function and wherein the commutation shifting apparatus pre-displaces the moments of commutation increasingly toward the rotational position of the rotor after a specified motor speed has been exceeded.

43. (Cancel)

44. (Cancel)

45. (Previously presented) The assembly of claim 42, wherein the commutation shifting apparatus shifts the moment for turn-on of a motor current that is allocated to one commutation phase.

46. (Previously presented) The assembly of claim 42, wherein the commutation shifting apparatus shifts the moment for turn-off of a motor current that is allocated to one commutation phase.

47.(Previously presented) The assembly of claim 42, wherein the drive circuit further comprises a microprocessor controller.

48. (Previously presented) The assembly of claim 42, wherein the drive circuit further comprises a speed control circuit.

49. (Previously presented) The assembly of claim 42, wherein the first apparatus comprises a circuit for measuring motor speed and wherein the amount of commutation moment shifting by the commutation shifting apparatus is a predetermined function of measured motor speed.

50. (Previously presented) The assembly of claim 49, wherein the commutation shifting apparatus pre-displaces the moments of commutation relative to the rotational position of the rotor, as a function of the estimated motor speed.

51. (Previously presented) The assembly of claim 42, wherein the rotor position measuring circuit comprises a circuit for estimating motor speed and the amount of commutation moment shifting by the commutation shifting apparatus is a predetermined function of estimated motor speed.

52. (Amended) An assembly comprising:
a load member; and
a brushless DC motor, comprising:
a rotor;
a stator housing at least one stator coil; and
a drive circuit comprising:
a rotor position measuring circuit for measuring angular position of the rotor relative to the stator and for determining motor speed;
a commutator circuit for connecting and interrupting current to the stator coil at specified moments of commutation determined from the angular rotor position relative to the stator; and
a commutation shifting apparatus for shifting the specified moments of commutation, the amount of shifting being a predetermined function of motor speed, wherein the moments of commutation are shifted as a function of the motor speed according to a piece-wise linear function and wherein the commutation shifting apparatus pre-displaces the moments of commutation

increasingly toward the rotational position of the rotor after a specified motor speed has been exceeded.

53. (Cancel)

54. (Cancel)

55. (Previously presented) The assembly of claim 52, wherein the commutation shifting apparatus shifts the moment for turn-on of a motor current that is allocated to one commutation phase.

56. (Previously presented) The assembly of claim 52, wherein the commutation shifting apparatus shifts the moment for turn-off of a motor current that is allocated to one commutation phase.

57. (Previously presented) The assembly of claim 52, wherein the drive circuit further comprises a microprocessor controller.

58. (Previously presented) The assembly of claim 52, wherein the drive circuit further comprises a speed control circuit.

59. (Previously presented) The assembly of claim 52, wherein the first apparatus comprises a circuit for measuring motor speed and wherein the amount of commutation moment shifting by the commutation shifting apparatus is a predetermined function of measured motor speed.

60. (Previously presented) The assembly of claim 59, wherein the commutation shifting apparatus pre-displaces the moments of commutation relative to the rotational position of the rotor, as a function of the estimated motor speed.

61. (Previously presented) The assembly of claim 52, wherein the rotor position measuring circuit comprises a circuit for estimating motor speed and the amount of commutation moment shifting by the commutation shifting apparatus is a predetermined function of estimated motor speed.

62. (New) An assembly comprising:
a load member; and
a brushless DC motor, comprising:
a rotor;
a stator housing at least one stator coil; and
a drive circuit comprising:
a rotor position measurement circuit for measuring angular position of the rotor relative to the stator and for determining motor speed:
a commutator circuit for connecting and interrupting current to the stator coil at specified moments of commutation determined from the angular rotor position relative to the stator; and
a commutation shifting apparatus for shifting the specified moments of commutation, the amount of shifting being a predetermined
function of motor speed and wherein the commutation shifting apparatus, responsive to initial start-up, pre-displaces the moments of commutation by a specified, first electrical preignition angle with respect to the rotational position of the rotor.

63. (New) An assembly, comprising:
a load member; and
a brushless DC motor, comprising:
a rotor;
a stator housing at least one stator coil; and
a drive circuit comprising:
a rotor position measuring circuit for measuring angular position of the rotor relative to the stator and for determining motor speed;

a commutator circuit for connecting and interrupting current to the stator coil at specified moments of commutation determined from the angular rotor position relative to the stator; and

a commutation shifting apparatus for shifting the specified moments of commutation, the amount of shifting being a predetermined function of motor speed, wherein the moments of commutation are shifted as a function of the motor speed according to an unsteady function and wherein the commutation shifting apparatus, responsive to initial start-up, pre-displaces the moments of commutation by a specified, first electrical preignition angle with respect to the rotational position of the rotor.

64. (New) An assembly comprising:
a load member; and
a brushless DC motor, comprising:
a rotor;
a stator housing at least one stator coil; and
a drive circuit comprising:

a rotor position measuring circuit for measuring angular position of the rotor relative to the stator and for determining motor speed;

a commutator circuit for connecting and interrupting current to the stator coil at specified moments of commutation determined from the angular rotor position relative to the stator; and

a commutation shifting apparatus for shifting the specified moments of commutation, the amount of shifting being a predetermined function of motor speed, wherein the moments of commutation are shifted as a function of the motor speed according to a piece-wise linear function and wherein the commutation shifting apparatus, responsive to initial start-up, pre-displaces the moments of commutation by a specified, first electrical preignition angle with respect to the rotational position of the rotor.